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**Plasma biasing to control the growth conditions of
diamond-like carbon**

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It is well known that the bonding structure of diamond-like carbon, and in particular the sp^2/sp^3 ratio, can be controlled and tuned by the energetics of the condensing carbon ions or atoms, and films assisting ions, if present. In many cases, the energy of ions arriving at the surface of the growing film is determined by the bias applied to the substrate. The bias causes a sheath to form between substrate and plasma in which the potential difference between plasma potential and surface potential drops. In this contribution, we demonstrate that the same results can be obtained with substrates that are grounded or not biased by shifting the plasma potential. This “plasma biasing” is shown to work well with pulsed cathodic carbon arcs, resulting in tetrahedral amorphous carbon (ta-C) films that are comparable to films obtained with the more conventional substrate bias. To verify this, ta-C films made by conventional bias and plasma bias were characterized by transmission electron microscopy (TEM) and electron energy loss spectrometry (EELS).

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